

REMARKS

Claims 2 and 17 are pending in this application. By this Amendment, claim 2 is amended. Support for the amendments to claim 2 may be found, for example, in the specification at page 14, lines 2-10, page 16, lines 17-19, and page 38, lines 6-17. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Rejection of Claim 2 Under 35 U.S.C. §102/§103

The Office Action rejects claim 2 under 35 U.S.C. §102(b) as anticipated by, or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent Application Publication No. 2003/0035999 to Gao et al. ("Gao"). Applicants respectfully traverse the rejection.

Gao at least fails to teach or suggest "at least a part of the magnesium on said surface [of the lithium-transition metal composite oxide] is present as magnesium oxide" as required by claim 2. Gao is silent on magnesium oxide present on the surface of a lithium-transition metal composite oxide.

Gao also fails to teach or suggest having both lithium zirconate and magnesium oxide on the surface of a lithium-transition metal composite oxide as required by claim 2. Rather, Gao discloses a positive electrode active material that includes at least one electron conducting compound of the formula $\text{LiM}^1_{x-y}\{\text{A}\}_y\text{O}_z$ (where M^1 is a transition metal and $\{\text{A}\}$ is a dopant element) and at least one electron insulating and lithium ion conducting metal oxide defined as LiAlO_2 or LiM^2O_3 in which M^2 is at least one of Ti, Zr, Sn, Mn, Mo, Si, Hf, Ru and Te. See, e.g., Abstract. Although lithium zirconate (LiZrO_3) is represented by the formula LiM^2O_3 , Gao fails to teach its coexistence with magnesium oxide on the surface of a lithium-transition metal.

The presence of a zirconium compound and a magnesium compound on the surface of the lithium-transition metal composite oxide provides synergistic effects, such as improved cycle characteristics and improved high rate characteristics from the presence of the zirconium compound, and improved thermal stability without deteriorating the cycle characteristics and high rate characteristics at high charging potentials from the magnesium compound. See specification at page 32, line 20 to page 33, line 5; see also MPEP §2141. Further, the presence of zirconium and magnesium reduces interface resistance and improves power characteristics at high charging potentials without deteriorating the cycle characteristics and high rate characteristics at high charging potentials. See specification at page 33, lines 5-10.

Moreover, Gao fails to specifically teach or suggest that "the lithium-transition metal composite oxide is lithium cobaltate" as required by claim 2. Rather, Gao specifically discloses that exemplary compounds include $\text{LiNi}_{0.7}\text{Co}_{0.1}\text{Ti}_{0.1}\text{Mg}_{0.1}\text{O}_2$, $\text{LiNi}_{0.75}\text{Co}_{0.15}\text{Ti}_{0.05}\text{Mg}_{0.05}\text{O}_2$, and $\text{LiNi}_{0.7}\text{Co}_{0.2}\text{Ti}_{0.05}\text{Mg}_{0.05}\text{O}_2$. See paragraph [0022]; Examples 1-3, beginning at paragraph [0047]. Each of these compounds is a lithium nickelate, and is not a lithium cobaltate as required by claim 2.

Thus, Gao does not anticipate and would not have rendered obvious claim 2. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Rejection of Claim 17 Under 35 U.S.C. §103

The Office Action rejects claim 17 under 35 U.S.C. §103(a) as obvious over Gao in view of U.S. Patent Application Publication No. 2002/0127473 to Ooya et al. ("Ooya"). Applicants respectfully traverse the rejection.

Claim 17 depends from claim 2 and, therefore, contains all of the features of claim 2. The deficiencies of Gao with respect to claim 1 are discussed above. Ooya, which is applied

by the Office Action for additional features recited in claim 17, does not cure the deficiencies of Gao with respect to claim 2.

Ooya is directed to a positive electrode active material comprising a positive electrode active material body and oxide particles and/or carbon particles adhered to the positive electrode active material body. See, e.g., Abstract. Preferably, the oxides particles are selected from SiO_2 , SnO_2 , Al_2O_3 , TiO_2 , MgO , Fe_2O_3 , Bi_2O_3 , Sb_2O_3 and ZrO_2 . See Ooya at paragraph [0034]. The oxides particles are adhered to the positive electrode active material body to decrease the frictional forces caused among the positive electrode active material particles and, thus, increase the flowability of the active material to form a positive electrode active material layer having a high density when press-molded. Id. Ooya is silent on lithium zirconate being present on the surface of a lithium-transition metal composite oxide and, consequently, is silent on both lithium zirconate and magnesium oxide coexisting on the surface of a lithium-transition metal composite oxide.

Unlike Gao, where lithium zirconate is formed during the mixing and firing of the source compounds to produce the positive electrode active material, Ooya discloses forming the positive electrode active material body and, then adhering oxide and/or carbon particles to the formed body. See Ooya at paragraph [0051]. Accordingly, one of ordinary skill in the art would have had no reason or rationale to combine Gao and Ooya in a manner that would have produced the positive electrode active material of claim 2 because the processes for producing the respective positive electrode active materials of Gao and Ooya are unrelated.


Thus, Gao in view of Ooya would not have rendered obvious claim 17. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Date: January 28, 2009

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